CLAIMS

1. A system of controlling and triggering a TRIAC (TR), the TRIAC comprising a gate (G), the TRIAC (TR) being connected to a load, the gate (G) being electrically connected to a power unit (3) that actuates the TRIAC (TR) for selectively applying a network voltage (V_{AC}) to the load and enabling the circulation of an electric current (i_c) in the load, the system being characterized by comprising:

- a detection unit for detecting gate (1) voltage;
- a detection unit for detecting the passage of the feed network voltage (2) by zero;
- a power unit (3); and
- a control unit (4);

the voltage detection unit (1) being electrically connected to the control unit (4),

the control unit (4) establishing a gate (G) voltage limit value (+limit, -limit), and generating a pulse at the gate (G) of the TRIAC (TR) to keep it in conduction,

the pulse at the gate (G) being generated from a comparison between the voltage limit value (+limit, -limit) established by the control unit (4) and a voltage measured at the gate (G) from the gate (1) voltage detection unit.

2. A system according to claim 1, characterized in that the control unit (4) measures the electric current (i_c) and adjusts the voltage limit value (+limit, -limit) in a proportional way to the current (i_c) value measured.

3. A control system according to claim 2, characterized in that the control unit (4) generates the pulse at the gate (G) of the TRIAC (TR) in previously established a measurement time (t_M), the measurement time (t_M) occurring before the passage of the current (i_c) by zero.

4. A system according to claim 2, characterized in that the control unit (4) obtains the current (i_c) value from a current sensor (5).

5. A system according to claim 2, characterized in that the adjustment of the limit value (+limit, -limit) is made by means of the equation: ±

Limit = *k* x *Ic*, wherein *k* is a previously determined proportionality constant.

6. A system according to claim 2, characterized in that the adjustment of the limit (+limit, -limit) is made by means of a table of pre-established values stored in the control unit (4).

7. A system according to claim 1, characterized in that the detection unit (1) for detecting voltage at the gate (G) comprises a comparator (CP_1) electrically connected to the gate (G) of the TRIAC (TR) and to a D/A converter, the comparator (CP_1) receiving the signal of the voltage at the gate (G) of the TRIAC (TR) and a signal generated by the D/A converter, the D/A converter receiving a digital signal generated by the control central (44), the signal generated by the control central (44) establishing an adjustment voltage value, the adjustment voltage value being equal to the limit values (+limit, -limit).

8. A system according to claim 7, characterized by comprising a power unit (3), the power unit (3) being associated to the control unit and generating a voltage pulse at the gate of the TRIAC (TR) upon a command from the control central (44).

9. A system according to claim 8, characterized in that the control unit (4) comprises a digital-to-analog (D/A) converter, the digital-to-analog converter generating the adjustment voltage value.

10. A system according to claim 8, characterized in that the pulse at the TRIAC (TR) is generated when the control central (44) detects a transition of level of the comparator (CP_1) output.

11. A system according to claim 8, characterized in that the control central (44) commands the digital-to-analog (D/A) converter to commute between a positive voltage limit (+limit) to a negative limit (-limit) and vice-versa at every transition received by the comparator (CP_1).

12. A system according to claim 8, characterized in that the voltage of the gate (G) of the TRIAC (TR) is applied to the comparator (CP_1) by means of a resistive divider (R_1, R_2).

13. A system according to claim 12, characterized in that the resistive divider (R_1, R_2) is formed by resistors of the same value.

14. A system according to claim 7, characterized in that the digital-to-analog (D/A) converter is internal with respect to the control unit (44).

15. A system according to claim 7, characterized in that the comparator (CP_1) is internal with respect to the control central (44).

16. A system according to claim 7, characterized in that the power control unit (3) is an internal switch of the control central (44).

17. A method of controlling the triggering of a TRIAC (TR), the TRIAC comprising a gate (G) and being electrically connected to a network voltage (V_{AC}),

the TRIAC (TR) being selectively actuated upon a pulse at the gate (G) to apply the network voltage (V_{AC}) to a load, enabling the circulation of a current (i_c),

a comparator (CP_1) being associated to the gate (G) of the TRIAC (TR),

the method being characterized by comprising:

applying a pulse at the gate (G) when the voltage limit value (+limit, -limit) at the gate (G) has been detected, the pulse being generated from a transition at the comparator (CP_1), the comparator (CP_1) comparing the voltage limit voltage (+limit, -limit) at the gate (G) and a voltage measured at the gate (G),

commuting an input of the comparator (CP_1) from the positive voltage limit (+limit) and to a negative limit (-limit) and vice-versa at every transition received by the comparator (CP_1).

18. A method according to claim 17, characterized in that, prior to the step of applying the pulse at the gate (G), steps of measuring the current (i_c) circulating in the load are foreseen, and

adjusting the level of the voltage value at the gate (+limit, -limit) in a way proportional to the level of the current (i_c).

19. A method according to claim 18, characterized in that, in the step of adjusting the voltage limit value (+limit, -limit), the equation: $\pm Limit = k \times Ic$ is applied, wherein k is a proportionality constant.

20. A method according to claim 18, characterized in that, in the

step of adjusting the voltage limit value (+limit, -limit), there is a step of reading a table of pre-established values.

21. A method according to claim 18, characterized in that the voltage pulse at the gate (G) has a duration sufficient for the current circulating in the TRIAC (TR) to reach a latch value.

22. A method according to claim 21, characterized in that the first pulse of the gate (G) is commanded from a measurement of passage of the network (V_{AC}) by zero.

23. A method of controlling the triggering of a TRIAC (TR), the TRIAC comprising a gate (G) and being electrically connected to a network voltage (V_{AC}),

the TRIAC (TR) being selectively actuated upon a pulse at the gate (G) to apply the network voltage (V_{AC}) to a load, enabling the circulation of a current (i_c),

the method being characterized by comprising the steps of:

applying a pulse at the gate (G) when the current value (i_c) reaches a minimum value, establishing a voltage limit value (+limit,-limit) at the gate (G) to generate the pulse at the gate (G) of the TRIAC (TR) for keeping it in conduction, the pulse at the gate (G) being generated in a previously established measurement time (t_M) , the measurement time (t_M) occurring before the passage of the level of the current (i_c) by zero,

measuring the current (i_c) that circulates in the load, and

adjusting the level of the voltage limit value (+limit, -limit) at the gate (G) in a proportional way to level of the current (i_c).

24. A method according to claim 23, characterized in that the current (i_c) is continuously measured.

25. A method according to claim 24, characterized in that, in the step of applying the pulse at the gate (G) of the TRIAC (TR_1), it is foreseen to regulate the level of voltage in the load from the delay in generating the pulses at the gate (G).